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Procedia - Social and Behavioral Sciences 171 (2015) 1288 – 1295

Procedia
Social and Behavioral Sciences

ICEEPSY 2014

Treatment adherence in hypertensive patients - a cross-sectional study

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Abstract

Introduction: Epidemiological studies have indicated that the greatest challenge of hypertension is treatment adherence. This condition should be the primary focus of health care, particularly in chronic diseases/hypertension. The objectives of this study were to assess the treatment adherence among adults with hypertension in a Family Health Unit and characterise hypertensive patients of a Family Health Unit in Viseu, Portugal.
Research Methods: In a cross-sectional study we assessed 106 patients (50.9% male), mean age 58.26 ± 11.60 years and followed them up in the hypertension medical appointment in primary health care. We collected data through a questionnaire answered at the hypertension medical appointment, with questions about sociodemographic variables, Measure Treatment Adherence (MTA) scale and issues related to healthy lifestyle practices.
Findings: On average the hypertensive patients had this disease for 8.68±9.8 years; higher among males ($p<0.001$) and 8.5% are not medicated. The majority of the hypertensive patients do not present treatment adherence (73.6% vs. 26.4%). In the total sample, 36.8% of hypertensive patients present poor treatment adherence; 17.0% moderate and 46.2% high adherence.
Conclusion: We conclude that most hypertensive patients do not adhere properly to treatment, using the MTA scale. Studies are needed in order to understand the barriers to non-adherence in order to develop strategies to increase adherence.

Peer-review under responsibility of the Organizing Committee of ICEEPSY 2014.

Keywords: Hypertension; adherence; adults; primary care.

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Peer-review under responsibility of the Organizing Committee of ICEEPSY 2014.
doi:10.1016/j.sbspro.2015.01.243

1. Introduction

Adherence to treatment regimen, treatment adherence or treatment compliance are terms used to describe the same condition. Adherence can be defined as the degree of concordance between the recommendations of the health professional and the individual's behaviour regarding the treatment regimen (Delgado & Lima, 2001). This comprehensive and accurate definition allows us to understand the complexity and diversity of behaviours that can be included in treatment adherence during the therapeutic process – following the previously scheduled appointments, purchasing prescription drugs and taking them appropriately, following diets, practising physical exercise, or even abandoning risky behaviour (Delgado & Lima, 2001). The World Health Organization (WHO) states there is adherence when a person's behaviour, in taking their medication, in compliance with a diet and/or lifestyle changes, corresponds to a health professional's recommendations (WHO, 2003). Thus, treatment adherence should be one of the cores of health care needs and that health professionals pay attention to, with particular relevance in the context of chronic diseases. Hypertension is a chronic disease, responsible for several comorbidities and constitutes a major challenge to global public health because of its high prevalence and concomitant risk for cardiovascular and renal diseases. Currently, over 25% of the world population is hypertensive with estimates that this percentage may increase to 29% by 2025 (Kearney, Whelton, Reynolds, Muntner, Whelton & He, 2005). Cardiovascular diseases are among the leading causes of morbidity, mortality and disability in Portugal (Ribeiro, Furtado & Pereira, 2013). Several cardiovascular risk factors, both modifiable (including hypertension, diabetes mellitus, hypercholesterolemia, dyslipidemia, obesity, smoking, sedentary lifestyle, alcohol and stress) and non-modifiable (sex, age and personal and family history), contribute to the onset, complications and prognosis of cardiovascular diseases. It is estimated that 75% of the cases of cardiovascular diseases are associated with modifiable risk factors including hypertension and therefore preventable and/or manageable (Vaz, Santos & Vaz Carneiro, 2005). Clearly, many individuals have difficulty following the treatment health professional's recommendations. Adherence to long-term treatment in patients with chronic diseases in developed countries is estimated at 50%. In developing countries, the rates are even lower (WHO, 2003). A study with a sample of 537 adults with chronic illness revealed 66.1% adherence; with 44.3% poor adherence; 14.9% moderate and 40.8% high adherence Amaral, Chaves, Veiga & Dionísio, 2013).The same study showed that adherence was associated with the area of residence rural OR= 0.59 IC95% 0.41-0.85) (Amaral, Chaves, Veiga & Dionísio, 2013). Is it that one of the main problems facing the health system is abandoning or incorrect compliance with the treatments prescribed by health professionals? Poor adherence severely compromises treatment effectiveness, making this issue a critical problem for the population's health, both in terms of quality of life and the economics of health European Society of Cardiology, 2013; Herttua, Tabák, Martikainen, Vahtera, Kivimäki, 2013). Interventions to improve adherence would provide a significant positive return on investment through primary prevention (risk factors) and secondary prevention of adverse health events. Several studies have reported that the biggest challenge of hypertension is treatment adherence, and poor adherence, the most important cause of uncontrolled blood pressure ((Burt, Whelton, Roccella, Brown, Cutler, Higgins, Horan & Labarthe, 1995; WHO, 2003; University of East Anglia, 2011; European Society of Cardiology, 2013) and only 20% to 80% of patients receiving hypertension treatment are considered "good compliers" (Costa, 1996). Two of the most important factors contributing to poor adherence are undoubtedly the asymptomatic and lifelong nature of the disease. Other potential determinants of adherence may be related to: demographic factors (age and education); the patient's understanding and perception of hypertension; the health care provider's mode of delivering treatment; relationships between patients and health care professionals and complex antihypertensive drug regimens. Poor socio-economic status, illiteracy and unemployment are important risk factors for poor adherence (Saounatsou, Patsi, Fasoi, Stylianou, Kavga, Economou, Mandi & Nicolaou, 2001; Bone, Hill, Stallings, Gelber, Barker, Baylor, Harris, Zeger, Felix-Aaron, Clark & Levine, 2000). It is in proximity to the patient/family that the nurse plays a role in the hypertension appointment becoming a privileged link at an appropriate location in following these patients and assessing treatment compliance.

1.1 Problem Statement:

Hypertension is an important public health problem, responsible for increased cardiovascular disease (cerebral vascular accidents, myocardial infarction) and, in turn, increased mortality, morbidity and disability. Data from several studies suggest that poor adherence to antihypertensive treatment significantly increases the short and long term risk of stroke in hypertensive patients. Therefore, this study allows us to conduct a situation analysis on the adherence of hypertensive patients followed in primary care in order to plan interventions appropriate to reality, i.e., the needs of the community.

1.2 Research Questions

What is the treatment adherence in hypertensive patients followed in the hypertension in the Family Health Unit of Viseu, Portugal? What are the characteristics of hypertensive patients? What healthy practices are associated with treatment adherence?

1.3 Purpose of the Study:

To evaluate treatment adherence in hypertensive patients followed in the hypertension in the Family Health Unit of Viseu; to characterise hypertensive patients and identify healthy practices associated with treatment adherence.

2. Research Methods

We conducted a cross-sectional analytical study using a non-probability convenience sample. Data were collected through a face to face questionnaire answered by patients at their hypertension consultation at the Family Health Unit (FHU) of Viseu. The questionnaire consisted of three parts - the first relating to socio-demographic characterisation, the second consisted of the Measure Treatment Adherence (MTA), scale and the last one, to issues related to healthy lifestyle practices (physical activity, nutrition/diet and taking medication). The final sample consisted of 106 patients of whom 50.9% were male. The average age was 58.26±11.60, higher in males (60.22±1.50 vs. 56.23±1.67).

From Table 1, we find that the age distribution in both sexes 18.9% was aged 50 or over, 52.8% between 51 and 65 and 28.3% aged 66 or over. The highest proportion of men lived in villages (48.1%) and in females, the highest proportion in the city (52.0%). Regarding marital status, the majority of patients surveyed (78.8%) were married or living in a civil union, 19.2% were separated/divorced/widowed, and 1.9% single. Considering both sexes, 47.2% had the 1st cycle [the 4th year] of schooling; 34.0% the 2nd and 3rd cycle [respectively, the 6th and 9th years] of schooling; 10.3% had higher education and 8.5% can neither read nor write/sign their name. In addition, the majority was retired (43.4%); 33.7% employed; 20.7% were housewives and 2.2% were unemployed/student.

Table 1. Socio-demographic characteristics of the sample.

	Female		**Male**		**Total**	
	n (52)	**%** (49,1)	**n** (54)	**%** (50,9)	**n** (106)	**%** (100,0)
Age (years)						
≤50 years	12	23,1	8	14,8	20	18,9
51-65 years	30	57,7	26	48,1	56	52,8
≥66 years	10	19,2	20	37,0	30	28,3
Area of residence						
Village	20	40,0	25	48,1	45	44,1
Town	4	8,0	6	11,5	10	9,8
City	26	52,0	21	40,4	47	46,1
Marital status						
Single	1	1,9	1	1,9	2	1,9
Married/civil union	39	75,0	43	82,7	82	78,8
Separated/div./widowed	12	23,1	8	15,4	20	19,2

Academic qualifications						
Can neither read nor write/sign name	5	9,6	4	7,4	9	8,5
1st cycle [the 4th year]	23	44,2	27	50,0	50	47,2
2nd and 3rd cycle [respectively, the 6th and 9th years]	16	30,8	20	37,0	36	34,0
Higher education	8	15,4	3	5,6	11	10,3
Employment status						
Employed	14	31,1	17	36,2	31	33,7
Unemployed/Student	2	4,4	___	___	2	2,2
Retired	15	33,3	25	53,2	40	43,4
Housewife	14	31,1	5	10,6	19	20,7

Adherence to treatment was assessed using the MTA scale. This scale is an instrument composed of seven items that assess an individual's behaviour in relation to everyday use of medicines (Delgado & Lima, 2001). Some items have been adopted by other authors (items 1, 2, 3 and 4) (Morisky, Levine, Green & Smith, 1982), item 6 (Ramalhinho, 1994) and item 7 (Shea, Misra, Ehrlich, Field & Francis, 1992). The answers are obtained by an ordinal six-point scale ranging from 'always' (1 point) to 'never' (6 points). The values obtained from the responses to the seven items are added and divided by the number of items. Later, the 5 and 6 values are converted into a one (adherence) and the rest are converted to a zero (non-adherence), ending up with a yes/no (adherence/non-adherence) dichotomous scale. Higher values mean higher levels of adherence.

Regarding the psychometric characteristics of the MTA scale, considering the reliability of the instrument (internal consistency), Table 2 shows the statistical values (mean±standard deviation) and correlations between each item and the overall value, showing about how each item is combined with the overall value. From the results, we find that the MTA features among the various assessment items, Cronbach Alpha coefficient values varying between 0.660 (item 3) and 0.718 (item 6). The total item corrected correlation coefficients show that item 2 is the most problematic with the minimum value (r = 0.216). On the other hand, the maximum correlation value was obtained for item 7 (r = 0.629). With regards to the mean and respective standard deviation, we can observe weak variability among the items.

Table 2. Measure of treatment adherence (MTA) scale.

MTA	X± **SD**	R	R^2	Alpha
1 – 1 - Have you ever forgotten to take medication for your illness?	4.26±0.919	0.514	0.334	0.682
2 - Have you ever been careless about the time of taking your hypertension medication?	4.31±0.888	0.216	0.222	0.771
3 - Have you ever stopped taking your hypertension medication because you felt better?	4.75±0.645	0.589	0.382	0.660
4 - Have you ever stopped taking your hypertension medication on your own initiative after having felt worse?	4.87±0.480	0.563	0.610	0.679
5 - Have you ever taken more one or more hypertension tablets on your own initiative after having felt worse?	4.87±0.536	0.491	0.501	0.688
6 - Have you ever discontinued hypertension therapy because your medication ran out?	4.68±0.526	0.331	0.186	0.718
7 - Have you ever stopped taking your hypertension medication for some reason other than on your doctor's orders?	4.83±0.507	0.629	0.619	0.664

Permission was requested from the FHU - Viriato coordinator to administer the questionnaires in the nursing consultation and the waiting room. Participants were selected through the contacts of patients followed in the hypertension programme. In order to ensure the confidentiality and anonymity of the data, the questionnaire was anonymous.

Collected data were entered into a database and processed using the Statistical Package for Social Sciences (SPSS) version 21.0. The continuous variables were described using the mean and standard deviation. The Chi-square test was used to compare proportions and the Kruskal-Wallis test to compare continuous variables.

3. Findings

Patients have had chronic hypertensive disease on average for 8.68±9.8. Females have had it for 7.8±7.7 years and males for 9.5±6.0 years, with statistically significant differences ($p<0.001$).

In the total sample (106 patients), only 8.5% were not being treated with antihypertensive therapy. Of the patients taking antihypertensive medication, 68.6% reported 'never' forgetting to take it in the last month; 27.6% forgot less than once per week, and 3.8% more than once a week. With regards to the last week, 88.6% of patients mentioned they had 'never' forgotten to take it and 11.4% said they had forgotten one or more times per week. From Table 3, we observed that 94.2% of the women and 88.9% of the men are treated with antihypertensive therapy. The proportion of patients who reported 'always' complying with their medication recommendations was higher in males ($p=0.04$). Regarding diet and exercise recommendations, differences were not statistically significant.

Table 3. Distribution of hypertensive patients according to clinical variables.

	Hypertension			
	Females		Males	
	n	%	n	%
Duration of illness				
≤ 5 years	23	44.2	21	38.9
> 5 years	29	55.8	33	61.1
p		0.58		
Takes hypertension medication				
Yes	49	94.2	48	88.9
No	3	5.8	6	11.1
Fisher - p		0.49		
Complies with medication recommendations				
always	37	71.2	47	87.0
almost always	15	28.8	7	13.0
p		0.04		
Complies with diet recommendations				
Always/almost always	42	80.8	40	75.5
Seldom/never	10	19.2	13	24.5
p		0.51		
Complies with exercise recommendations				
Often	24	46.2	28	52.8
Seldom	28	53.8	25	47.2
p		0.49		

We find, from Table 4, the majority of hypertensive patients are non-compliant with treatment (73.6% vs . 26.4%), being lower in women (49.1% vs. 50.9%), although not statistically significant ($p=0.32$) differences. In the total sample, 36.8% of the hypertensive patients have poor treatment adherence; 17.0% moderate and 46.2% high adherence to. The differences between the sexes ($p=0.45$) were not significant.

Table 4. Treatment adherence by gender.

	Females		Male		Total	
	n	**%**	**n**	**%**	**n**	**%**
	(52)	***(49.1)***	***(54)***	***(50.9)***	***(106)***	***(100.0)***
Adherence						
Poor adherence	22	42.3	17	31.5	39	36.8
Moderate Adherence	9	17.3	9	16.7	18	17.0
High adherence	21	40.4	28	51.9	49	46.2

We may also note that in females, 30.8% adhere to treatment and 69.2% do not; in men, 22.2% adhere and 77.8% do not.

According to Table 5, of the hypertensive patients the highest proportion report they 'always' comply with the medication recommendations (60.7% vs. 39.3%, p<0.01); 'always/almost always' comply with diet recommendations (71.4% vs. 28.6%) and 'seldom' comply with exercise recommendations given (57.1% vs. 42.9%). The hypertensive patients who have had the disease for five years or longer adhere to treatment (60.7% vs. 39.3%). Most patients said they usually monitor their blood pressure.

Table 5. Healthy practices and treatment adherence in hypertensive patients.

	Adhere		Do not adhere		Total	
	n	%	n	%	n	%
Medication recommendations						
Always	17	60.7	67	85.9	84	79.2
Almost always	11	39.3	11	14.1	22	20.8
p				<0.01		
Diet recommendations						
Always/almost always	20	71.4	62	80.5	82	78.1
Seldom/never	8	28.6	15	19.5	23	21.9
p				0.32		
Exercise recommendations						
Often	12	42.9	40	51.9	52	49.5
Seldom	16	57.1	37	48.1	53	50.5
p				0.41		
Duration of disease						
≤ 5 years	11	39.3	33	42.3	44	41.5
> 5 years	17	60.7	45	57.7	62	58.5
p				0.78		
Monitor blood pressure						
Yes	25	92.6	72	94.7	97	94.2
No	2	7.4	4	5.3	6	5.8
p				0.68		

4. Conclusions:

In this study we found that most hypertensive patients did not adhere to treatment, and when analyzed by the cut-offs, 36.8% have poor treatment adherence, 17.0% moderate adherence and 46.2% high adherence. Although females generally present a higher percentage of adherence and higher percentages of poor and moderate adherence, the differences are not statistically significant.

What raises concerns, and is in line with scientific evidence (European Society of Cardiology 2013; Herttua, Tabák, Martikainen, Vahtera & Kivimäki, 2013), is the high prevalence of non-adherence (73.6%). Most studies point to the hypertensive patient's resistance to adherence and non-adherence to antihypertensive treatment is a recognized causes of poor blood pressure control.

A study conducted with a sample of 537 adults with chronic illness in Viseu revealed an adherence of 66.1%; with 44.3% poor adherence; 14.9% moderate adherence and 40.8% high adherence (Amaral, Chaves, Veiga & Dionísio, 2013). A study in Brazil with a sample of 383 adults showed that 96.9% of patients had had a diagnosis of hypertension for an average of 14±9 years and 54.3% of the patients adhered to antihypertensive treatment (Souza, Stein, Bastos & Pellanda, 2014). Another study conducted with a sample of 100 hypertensive patients followed in a health unit showed that the degree of treatment adherence among hypertensive patients was 45%, using the MTA scale (Lima, Meiners & Soler, 2010), differing from the data presented by Vieira, who observed 70% non-adherence (Vieira, 2004).

In this study the hypertensive patients who adhered to treatment mentioned 'always' complying with recommendations about medication; 'always/almost always' with diet recommendations although 'seldom' with recommendations regarding exercise. The fact of hypertensive patients mentioning they 'rarely' comply with the

recommendations on exercise, enables us to wonder if they understand the importance of exercise in treating hypertension, whether they are used to doing it, or if they are patients who cannot exercise regularly due to other disabilities.

The results of this research show that non-adherence to treatment is a reality and concern because of the importance of hypertension as a risk factor causing disability and increased mortality risk, leading to increased health spending. Chronic non-communicable diseases represent one of the major health challenges for global development in the coming decades (Casado, Viana & Thuler, 2009). Among chronic diseases, hypertension is a major risk factor for cardiovascular disease; it is present in 69% of the patients with a first myocardial infarction, in 77% of patients with a first stroke, in 74% of patients with chronic heart failure and in 60% of patients with peripheral arterial disease (Aronow, 2012; Souza, Stein, Bastos & Pellanda, 2014).

The rate of treatment adherence can range from 50% to 90% among hypertensive patients (Souza, Stein, Pellanda & Bastos, 2014). To improve these rates, it is necessary to implement primary health care measures (Souza & Menandro, 2011). This study is important as knowledge of hypertensive patients in order to plan strategies appropriate to needs. On the other hand, it suggests conducting studies in order to understand the high levels of non-adherence of the hypertensive patient. Appropriate interventions through primary and secondary prevention of adverse health events and to improve adherence would provide a positive return on the quality of life of individuals and the health system in general.

Acknowledgements

The Portuguese Foundation for Science and Technology (FCT) through the project PEst-OE/CED/UI4016/2014, and the Centre for Studies in Education, Technologies and Health (CI&DETS).

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